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Title : HARBOR SEALS DUCK CRUISE SHIPS, BUT DOES THE POPULATION?:
A MULTI-SCALE STUDY IN A TIDEWATER GLACIAL FJORD

Category : Conservation

Student :

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Abstract : Cruise tourism in Alaska has grown dramatically since the early 1970's but efforts to quantify possible impacts on coastal ecosystems have been few. Attention has focused recently on the potential effects of tour vessels on subsistence resources important to Alaska Natives. Harbor seals that haul out on floating ice in tidewater glacial fjords are one such resource of concern because their habitat is a popular destination for tourism. This study examined the potential effects of cruise ships entering Disenchantment Bay, Alaska on the behavior, abundance, and distribution of harbor seals. We employed a multi-scale method to assess vessel effects through: 1) daily observations of individual seal behavior from cruise ships; 2) weekly aerial surveys of seal and ice relative distribution and abundance using a down-looking video camera; and 3) monthly surveys of total population abundance and distribution using high-altitude photogrammetry of seals in Disenchantment Bay and of a nearby glacial population less frequented by cruise ships. The behavioral observations indicated that the likelihood of seals vacating ice floes rose steeply when ships approached to less than 500 m, with a 25 times greater likelihood of disturbance at 100m than at 500 m. Nearly 75% of seals entered the water when ships passed within 200 m compared to less than 10% at distances greater than 600 m. Aerial surveys showed a seasonal trend in seal abundance and pupping similar to that found in studies of undisturbed harbor seals using glacial ice. Spatial analyses revealed a coupling of seal and ice concentrations; we are examining whether this relationship is altered in the presence of cruise ships. By studying the interactions between seals and tour vessels over a range of scales, resource and industry managers can be made aware of the increased complexities in detecting population-level perturbations that may occur over long periods.